

### **REMARKS**

Claims 22-47 are pending in the application. Applicant expresses appreciation for the allowance of claims 22-26 and 41-47. Applicant notes that claim 40 depends from claim 22 and should also be allowed.

Claims 27-40 stand rejected under 35 U.S.C. 103(a), as being unpatentable over DiMeo, Jr. et al. (US 6,972,430) in view of Ohashi et al. (US 6,059,885). Applicant requests reconsideration.

Claim 38 sets forth an ALD method that includes, among other features, injecting a deposition precursor into a deposition chamber through a process chemical port in a lid of the chamber, chemisorbing only one monolayer of precursor material on the substrate in the absence of any additional deposition precursor, ceasing delivery of the precursor, and delivering purge material through the process chemical port. The method includes, while delivering the purge material through the process chemical port, separately delivering a purge material through a purge port in the lid, the purge delivery occurring through a dead space as to the process chemical port purge material. The purge port purge material is separated from a substrate holder with a flow director. Pages 2-3 of the Office Action allege that DiMeo in view of Ohashi discloses every limitation of claim 38. Applicant traverses.

Fundamental to the ground for rejection in the Office Action is the statement that "as the DiMeo reference teaches a deposition process, inherently some particles would adhere to the wall." That is, the Office Action essentially alleges particles are inherently generated in the DiMeo process, that those of ordinary skill recognize the inherent generation of particles, and that those of ordinary skill are motivated to modify DiMeo according to the teachings of Ohashi, allegedly performing the claimed ALD method.

However, "the mere fact that a certain thing may result from a given set of circumstances is not sufficient to establish inherency." In re Rijckaert, 9 F.3d 1531, 1534, 28 USPQ2d 1955, 1957 (Fed. Cir. 1993) (citations omitted) (emphasis in original); MPEP § 2112. Further, "[i]n relying upon the theory of inherency, the Examiner must provide a basis in fact and/or technical reasoning to reasonably support the determination that the allegedly inherent characteristic necessarily flows from the teachings of the applied prior art." Ex parte Levy, 17 USPQ2d 1461, 1464 (Bd. Pat. App. & Inter. 1990) (emphasis added); MPEP § 2112.

Review of the Office Action does not reveal any basis in fact and/or technical reasoning to establish that DiMeo inherently generates particles during deposition. It is not relevant that the DiMeo process might generate particles, it must necessarily generate particles. Also, the Office Action does not provide any evidence that those of ordinary skill recognize such allegedly inherent generation of particles given the distinct differences between the DiMeo and Ohashi methods, as further discussed below. If those of ordinary skill do not recognize the problem, then they cannot be motivated to find a solution to it.

Accordingly, applicant asserts that no motivation exists to combine DiMeo and Ohashi. Pages 2-3 of the Office Action alleges a motivation to modify DiMeo by using the straightening gas of Ohashi to prevent particles from adhering to walls of the chamber, as taught by Ohashi. However, thorough review of Ohashi and comparison to the DiMeo digital CVD process reveals that the particles generated in the Ohashi process do not occur in the DiMeo process. Accordingly, no motivation exists to modify DiMeo by including the Ohashi straightening gas. Further, amended claim 38 expressly sets forth chemisorbing only one monolayer of precursor material on the substrate in

the absence of any additional deposition precursor. Pursuant to the express teachings of Ohashi, such reference bears no applicability to the claimed method since the type of particles generated in the Ohashi CVD method do not occur in the claimed method. Thus, those of ordinary skill would not turn to Ohashi to modify an ALD method. Only the Applicants own specification recognizes both the problem particular to ALD and the claimed solution.

Fig. 3 of DiMeo reveals that providing precursor reactant source 44 is always separated from providing oxidant reactant source 48 by inert purge gas 46. That is, as taught by DiMeo, at no time are precursor reactant source 44 and oxidant reactant source 48 intentionally provided within reactor chamber 10 at the same time. Such a circumstance may be contrasted with the processing shown in Fig. 14 of Ohashi that generates particles. As those of ordinary skill clearly understand from the discussion in column 2, line 44 to column 3, line 8 of Ohashi, the gas phase reaction and formation of particles only occurs in circumstances where reactants are provided together. If only one type of reactant is provided, then such reactant does not react with itself in the gas phase to form particles. Accordingly, those of ordinary skill would consider DiMeo to eliminate the particle generation problem of Ohashi by providing precursor reactant source 44 separate from oxidant reactant source 48, as is conventional during digital CVD. Thus, those of ordinary skill would not find any motivation to modify DiMeo with the straightening gas of Ohashi since it would apparently not provide any benefit in the DiMeo method.

As disclosed in paragraphs 26 and 27, only the Applicant's own specification identifies an advantage to providing targeted purging in ALD where precursors are provided separately. The targeted purging may remove residual precursors that remain

in chamber dead spaces after conventional purging between precursor flows. Neither cited reference comprehends such an advantage. Thus, Applicant asserts that the Office's conclusion of obviousness is based on improper hindsight reasoning. Applicant acknowledges that judgments on obviousness may necessarily involve a reconstruction based in a sense on hindsight reasoning. However, such reconstruction can only take into account knowledge that was within the level of ordinary skill in the art at the time the claimed invention was made and cannot include knowledge gleaned only from Applicant's disclosure. In re McLaughlin, 443 F.2d 1392, 1395, 170 USPQ 209, 212 (CCPA 1971); MPEP 2145(X)(A). The Office Action does not identify any cited art that recognizes the problem resolved by Applicant's claimed method.

Applicant asserts that some motivation in the art must exist to support a combination of references, that the allegedly inherent motivation alleged by the Office is not properly supported, and that the Office Action does not identify any valid suggestion in the prior art of the desirability of the proposed DiMeo modification. At least for such additional reasons, Applicant asserts that the cited combination cannot be considered to disclose or suggest every limitation of claim 38. Claim 39 depends from claim 38 and is patentable at least for such reason as well as for the additional limitations of such claim not disclosed or suggested.

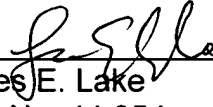
Amended claim 27 sets forth an ALD method that includes, among other features, injecting a deposition precursor into a deposition chamber, exposing a substrate to the precursor, and chemisorbing only one monolayer of precursor material on the substrate in the absence of another deposition precursor. The method includes, while injecting the precursor and chemisorbing the monolayer, separately injecting a purge material through a purge exit port into the chamber, separating the injected purge

material from the substrate holder with a flow director, and minimizing backflow of the injected purge material towards the substrate holder. The injected purge material flows along at least a portion of the chamber walls. As may be appreciated from the discussion above regarding the deficiencies of DiMeo in view of Ohashi with regard to claim 38, claim 27 is also patentable over the cited references. Claims 28-37 depend from claim 27 and are patentable over the cited references at least for such reason as well as for the additional limitations of such claims not disclosed or suggested.

Applicant herein establishes adequate reasons supporting patentability of pending claims 22-47 and requests allowance of all such pending claims in the next Office Action.

Respectfully submitted,

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